

Reducing Inequality of Human Opportunities in Vietnam: A Challenge for Social Progress

Nguyen Thi Kim Thai

Vu Thi Thu Thu

Centre for Analysis and Forecasting, Vietnam Academy of Social Sciences

April 2015

Acknowledgements: This work is carried out through a research grant and technical support from the Mekong Economic Research Network - a research initiative managed by the Centre for Analysis and Forecasting (CAF) of the Vietnam Academy of Social Sciences (VASS) with financial support from the International Development Research Centre (IDRC), Canada (project 105220). The authors are grateful for helpful comments and suggestions by Nguyen Thang and Vu Hoang Dat (CAF).

Abstract

This study investigates opportunities for children and its level of inequality in Vietnam based on Human Opportunity Index (HOI) by using several rounds of Vietnam Household Living Standard Survey (VHLSS), especially VHLSS 2012. The paper updates the standing status of 2012 of education and housing infrastructure opportunities as well as examines a new indicator relating to healthcare service. Firstly, HOIs for almost all opportunities exhibit improvements overtime with decreasing dissimilarities. Scale effect takes the lead in driving the changes in these indices. In addition, Shapley decomposition provides a common picture about the relative importance of each circumstance in determining inequality of children opportunities, indicating that education levels of household heads, well being and region circumstances are the most crucial factors. The vulnerable profile is then concludes general characteristics of the least vulnerable groups, which are living with less educated heads, being from a poor households in rural areas and belonging to ethnic minorities. Finally, regional HOI illustrates that access to sanitation reveals significant differences across regions as observed in previous years.

1. Introduction

Vietnam has made remarkable achievements in development process, both in economic and social dimensions. It has officially become a lower middle-income country since 2009, with expected income per capita of USD 2.300 in 2015. According to UNDP, although the overall poverty rate has declined, the pace of poverty reduction varied across regions and population groups. In addition, other non-income indicators such as outcomes in health, education, and basic infrastructure experienced a relatively high level of inequality among different groups. In terms of water, for instance, the share of households having access to safe water of 2013-2014 Multiple Indicator Cluster Survey (MICS) remained stable at 92 percent compared to that of 2010-2011 MICS, but there still existed discrepancies across ethnicity, especially between ethnic minorities and Kinh/Hoa majority.

Recently, many policy makers have focused on inequality of non-income indicators since they reflect the social progress. Opportunities, basic services such as education or health cares, should be provided in a universal and equal basis. In other words, it is expected that inherent circumstances (e.g. age, ethnicity, location) do not affect the accessibility to these services of children. In that context, Human Opportunity Index (HOI) can be used to measure both the coverage rate of the opportunities and the extent to which inequality exists, taking account all their circumstances. This study, hence, will use the index to update the inequality situation in Vietnam with regard to education and housing infrastructure using VHLSS 2012 and compare its findings to previous results in Dat (2012). Moreover, a new health opportunity, which is the ownership of a health insurance, will be analyzed based on VHLSSs for 2004, 2006, 2008, 2010, and 2012 rounds to reflect another aspect of children opportunities.

The remainder of the study is organized as follows. Theoretical background of the research is presented in the next section. Section 3 gives some general information about opportunities, circumstances, and data set. Section 4 will review recent trends of HOI for studied opportunities. I will illustrate components of changes in HOI overtime in

section 5. Important circumstances which determine the inequality of opportunities are given in section 6. Section 7 describes characteristics of the most and the least vulnerable groups in Vietnam. I then present disparities in HOI across 8 regions in section 8. Finally, section 9 provides conclusion and policy implications for the study.

2. Theoretical background

There is a common consensus that opportunities, i.e. access to basic services, should be equal across different groups of population. In other words, the circumstances that people are born into, but not responsible for, should not affect the possibilities of their access to these goods and services. Nonetheless, in reality, opportunities are unequally allocated to people in different subgroups.

The coverage level is often used to assess the development of availability of basic goods and services overtime. However, it cannot measure the degree of inequality of accessibility across members in the society. In this context, the Human Opportunity Index (HOI), initiated by the World Bank, takes both the coverage and unequal level into account. The HOI is defined as the overall coverage rate of the opportunity (C) discounted by a penalty (P), i.e.:

$$HOI = C - P$$

The above equation can be expressed as the coverage rate adjusted by an inequality factor in which D indicates the dissimilarity index – D-index ($D=P/C$):

$$HOI = C*(1-D)$$

The statistical procedure for obtaining HOI is fairly straightforward which can be described as the following. A logistic model is firstly employed for a specific opportunity (dependent variable) and a number of circumstances (independent variables). From the estimated logistic model, one can calculate a predicted probability of access, \hat{p}_j for person j . The coverage is then given by:

$$\bar{C} = \sum_{j=1}^n w_j \hat{p}_j$$

where w_j are sampling weights.

The D-Index, \hat{D} is expressed as:

$$\hat{D} = \frac{1}{2\bar{C}} \sum_{j=1}^n w_j |\hat{p}_j - \bar{C}|$$

Finally, the HOI is calculated based on the above formula:

$$H\hat{O}I = \bar{C} * (1 - \hat{D})$$

One can decompose changes in HOI into three components: (i) *Composition* effect, which captures changes in distribution of circumstances; (ii) *Scale* effect, which reflects to changes in coverage rate of all groups; (iii) *Equalization* effect, which refers to the changes in coverage rates of vulnerable groups but the overall coverage remains the same.

There are some properties of HOI that should be considered when interpreting the results. Firstly, the HOI is not sensitive to inequality within vulnerable or non-vulnerable groups. Secondly, one cannot calculate the HOI for the whole population by aggregating all subgroup HOI. In this context, geometric HOI should be used to deal with the issue. Thirdly, the HOI is a function of a set of circumstances and the HOI with a specific set of circumstances is an upper-bound of the real HOI. It means that if more circumstances are included in addition to the existing set, the “new” HOI estimated will not be higher than the “old” one.

3. Opportunities, circumstances, and data

Opportunities

The three popular domains of basic goods and services for the analysis are education, housing infrastructure, and health, in which a number of opportunities is then chosen based on availability of data and conformity with Vietnam’s context. Table 1 shows opportunities and circumstances selected for the study.

There are two opportunities in the first domain, which are school attendance of children and completion of primary school on time. In particular, the former one is continued to broken down into 2 age groups: (i) between 7 and 11 years (ii) between 12

and 15 years. It should be noted that a child is defined as attending school if he/she had gone to school within 12 months prior to the survey time. Hence, age 7 is used instead of 6 in order to avoid the effects of time lags on schooling status. The completion of primary school on time is measured for children between 13 and 14 years who have finished grade 5 in Vietnamese education system.

In terms of housing infrastructure opportunities, access to improved safe water, electricity and improved sanitation facilities are three indicators of interest. Children aged from 0 to 16 will be assessed for all these opportunities. In the paper, UNICEF's definitions of improved safe water and improved sanitation facilities are applied. In details, improved safe water includes private tap water from inside and outside the house, deep drill wells, hand-dug and reinforced wells, hand-dug, non-reinforced and covered wells, protected springs, rain water and bought water. Improved sanitation facilities contain flush toilet, sulabh and double vault compost latrine.

Finally, health opportunity is measured by whether children aged between 0 and 16 have a health insurance card or a free healthcare/booklet/card/certificate. Since this index has never been calculated in previous papers, this study will use data from VHLSSs 2004 to 2012 to show its development over time.

Table 1 – List of opportunities and circumstances

| Domains | Circumstances |
|--|---|
| <i>Education</i> | Gender of children |
| School attendance of children aged between 7 and 11 years | Number of siblings aged between 0 and 16 years in the household |
| School attendance of children aged between 12 and 15 years | Gender and education of household head |
| Completion of primary school on time between 13 and 14 | Whether household head living with the spouse |
| <i>Basic housing infrastructure</i> | Expenditure per capita |
| Access to electricity | Living areas |
| Access to clean water | Regions |
| Access to sanitation facilities | Ethnicity |
| <i>Health</i> | |
| Have a health insurance card or a free healthcare/booklet/card/certificate | |

Circumstances

Circumstances are divided into seven categories, namely child gender, household composition (whether heads of households live with their spouse or not, number of siblings, gender of head), location (urban and rural), ethnicity (Kinh/Hoa as ethnic majorities and others as minorities), head of household's education (6 levels: No primary, Primary, Lower secondary, Upper secondary, Professional, Higher), region (8 regions: Red River Delta-RRD, North East-NE, North West-NW, North Central Coast-NCC, South Central Coast-SCC, Central Highlands-CH, South East-SE, Mekong River Delta-MRD), and household wealth (5 quintiles from the poorest to the richest). The way to construct the circumstances are also used in Dat (2012), so to some extent, comparison across periods can be achieved.

Data source

Data for investigation comes from Vietnam Household Living Standard Surveys (VHLSS) for the years 2004, 2006, 2008, 2010, and 2012. The sample size of 2004 - 2008 and 2010 – 2012 rounds contain 9,189 households and 9,299 households, respectively. It means that VHLSSs can be representative for the whole country and 8 or 6 regions¹. Each region is then divided into urban and rural areas. However, it should be mentioned that the sampling frame for VHLSSs 2002-2008 and VHLSSs 2010-2012 are based on different population census (1999 vs. 2009). Thus HOI and comparison across these periods should be drawn with caution.

4. HOI and recent trends: Some progresses in both coverage and equality

During the period 2002 – 2012, inequality of children's opportunities (as revealed by disparities between HOIs and coverage rates) in Vietnam has reduced gradually². In terms of "quantity" education, all of three opportunities, namely finished primary on time of children aged 13-14, school attendance of children aged 7-11 and school

¹ From 2010, 8 regions are integrated into 6 regions.

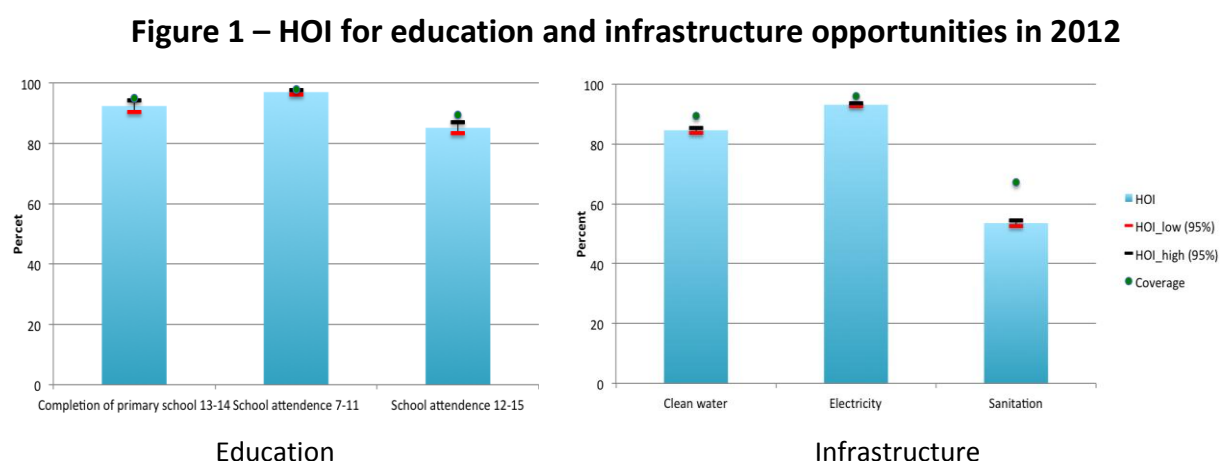
² Some HOI results specific to Vietnam and international comparison before 2012 come from Dat (2012) and Son (2013).

attendance of children aged 12-15, had good performance, given by the fact that their HOIs and coverage rates were always greater than 80 percent and gaps between them, in general, were relatively small. Specifically, there witnessed a remarkable progress in completion of primary school on time. Over a period of 10 years, HOI increased by more than 10 percent to 92.18 percent in 2012. School attendance of children aged 7-11 had the highest results, with the HOI rising from 94.11 percent in 2002 to 97.97 percent in 2012. The final opportunity, school attendance of children aged 12-15, also shows a minor improvement. In 2012, the difference between coverage and HOI was quite small but still statistically significant as the coverage rate lies outside the confidence interval of HOI, implying that these opportunities were provided inequally among different groups of circumstances. Specifically, the levels of inequality in the first two indicators were not as much as that in school attendance of children aged 12-15. The high rate of coverage and HOI, nonetheless, could not warrant ability of children to study at a higher level³. This issue is not discussed deeply here since the “quality” education is beyond the scope of the study.

With respect to infrastructure opportunities, similar to the trends of education opportunities, over the ten-year period, there were some improvements in all of them, especially in access to electricity and sanitation. Coverage rate and HOI for electricity were well over 90 percent, augmented by about 20 percent as compared to those in 2002. In addition, access to improved sanitation facilities still had the worst outcomes among the three, though they increased nearly double, from 28.12 percent in 2002 to 53.59 percent at the end of the research period. However, the huge gap between the coverage rate and the HOI indicates a high level of inequality in accessing this opportunity. Although Vietnam has made some progresses, the results became worse in international comparison due to the difference in definitions used between case

³ Results on quality of education from Dat (2012) based on the Study in Grade 5 Student Achievement in Mathematics and Vietnamese Language in 2006-2007 exhibited lower coverage and HOI (less than 80 percent) and larger differences between the two.

specific to Vietnam and international standard⁴. According to Dat (2012), HOI for access to safe water (i.e. piped water) and sanitation (i.e. flush toilets) in 2006 were just over 10 percent and under 20 percent, correspondingly, which fell behind many Latin American countries. The similar story happens when comparing these indicators of Vietnam to other developing Asian countries, as reported in Son (2013)⁵.



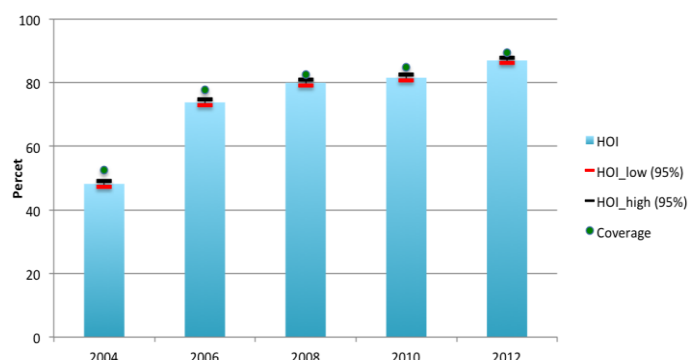
Source: Author's calculation from VHLSS 2012

Furthermore, indicator on accessing to health services, also shows a good performance. Indices of the health-service provision is presented in Figure 2. Coverage rate and HOI for the health opportunity swelled dramatically overtime, especially, in the period of 2004-2006, the rates rose by about 25 percent. Although the coverage rate was just over 50 percent in 2004, the level of inequality is relatively trivial. This situation does not follow the pattern that the lower the coverage rate, the higher the dissimilarity as observed in the other opportunities. Pro-poor policies of the government can explain the difference. In detail, health insurance cards of people in poor and some specific near-poor households are covered by a health insurance fund. In addition, in 2005, the National Assembly implemented the Law on Child Protection, Care and Education, which specified that all children under 6 years old receive free health care.

⁴ Definitions for the case of Vietnam are broader, including much more categories than those for international comparison.

⁵ The HOI for access to safe water and sanitation of Vietnam in 2008 based on VHLSS 2008 were 15.12 percent and 27.78 percent, respectively, which were much lower than results of Indonesia, Philippines, Sri Lanka, and Pakistan.

Figure 2 – HOI of health opportunity in 2004 - 2012



Source: Author's calculation from VHLSSs 2004, 2006, 2008, 2010, and 2012

5. The main component of changes in HOI: Scale effect

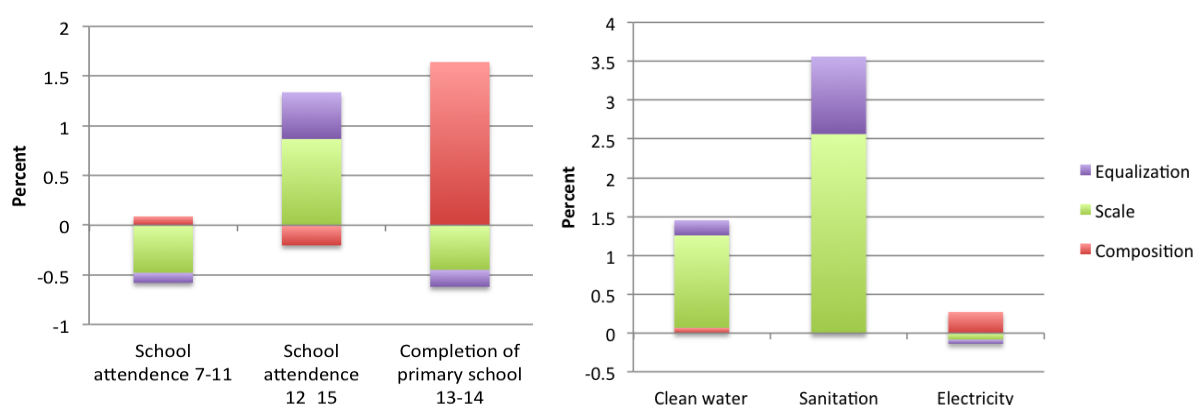
The questions should be raised here is that what factors (composition, scale or equalization effect) and the extent to which they affect dynamics of HOI overtime. Figure 3 presents the results for education and infrastructure opportunities using VHLSS 2010 and 2012.

With regard to dynamics of education provision, except for the case of school attendance of aged 7-11, the two remaining opportunities witness increases in HOI between 2010 and 2012. The regress in the former opportunity is minor, thus it is unnecessary to analyze it. The importance of the factors behind the changes is different across opportunities. While scale effect contributes the largest part in the improvement in HOI of school attendance of children aged 12-15, composition effect takes the lead in driving the change in completion of primary school on time (approximately 1.5 percent). In the study, scale and composition effects in the third indicator swap their ranks compared to results from decomposition tasks of Dat (2012) in sub-periods 2002-2004, 2004-2006, and 2006-2008.

Changing directory to housing infrastructure opportunities, the scale effect seems to be the most dominant factor. In particular, in 2012, it contributes 1.2 and 2.6 percentage points in total of 1.5 and 3.6 percentage changes of access to improved safe water and improved sanitation facilities, respectively. The lesser extent is driven by the

equalization, and followed by the composition effect. The growth in HOI of access to electricity this period is not impressive as compared to that in previous time. It is likely that there is a slowdown in the impacts of the three components on electricity opportunity.

Figure 3 – Decomposition of changes in HOI for education and infrastructure opportunities 2010-2012

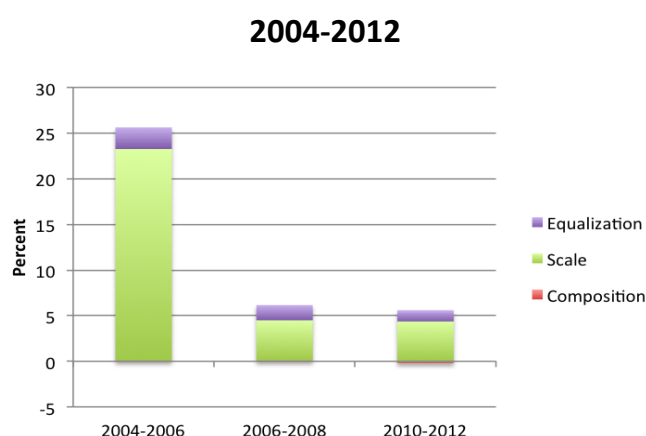


Source: Author's calculation from VHLSSs 2010 and 2012

In terms of health opportunity of children, over three sub-periods, the improvement in HOI is mainly a result of scale effect (see Figure 4). Specifically, out of nearly 26 percentage points, the estimated contribution of this effect is more than 23 percentage points in 2004-2006, leading to an incredible augmentation in HOI. Although its magnitude becomes smaller in the next two sub-periods, it is still greater than those in aforementioned opportunities.

In overall, the observed swelling in HOI of most indicators comes from scale effect which is similar to findings from Dat (2012). This suggests that the coverage rates of all groups proportionally increase and unequal situation among different groups of children do not improve much. In general, except for the case of completion of primary school on time, composition effect takes minor role in the growth of HOI, indicating that children's circumstances remain almost the same in each sub-period.

Figure 4 – Decomposition of changes in HOI for health insurance opportunity



Source: Author's calculation from VHLSSs 2004, 2006, 2008, 2010, and 2012

6. Which determines the inequality of human opportunities in Vietnam?

As mentioned earlier, in all cases, given the differences between HOI and coverage rate, there exists inequality between different groups of children in the society, and some opportunities are misallocated across sub-groups in term of a set of circumstances. If the coverage is lower, the dissimilarity is likely to be higher, excluding the case of health insurance. In this section, the decomposition task based on Shapley's technique will estimate the relative importance of each circumstance in determining the inequality of opportunities. The relative importance of each circumstance is presented in Figure 5 using seven categories of circumstances defined in Section 3.

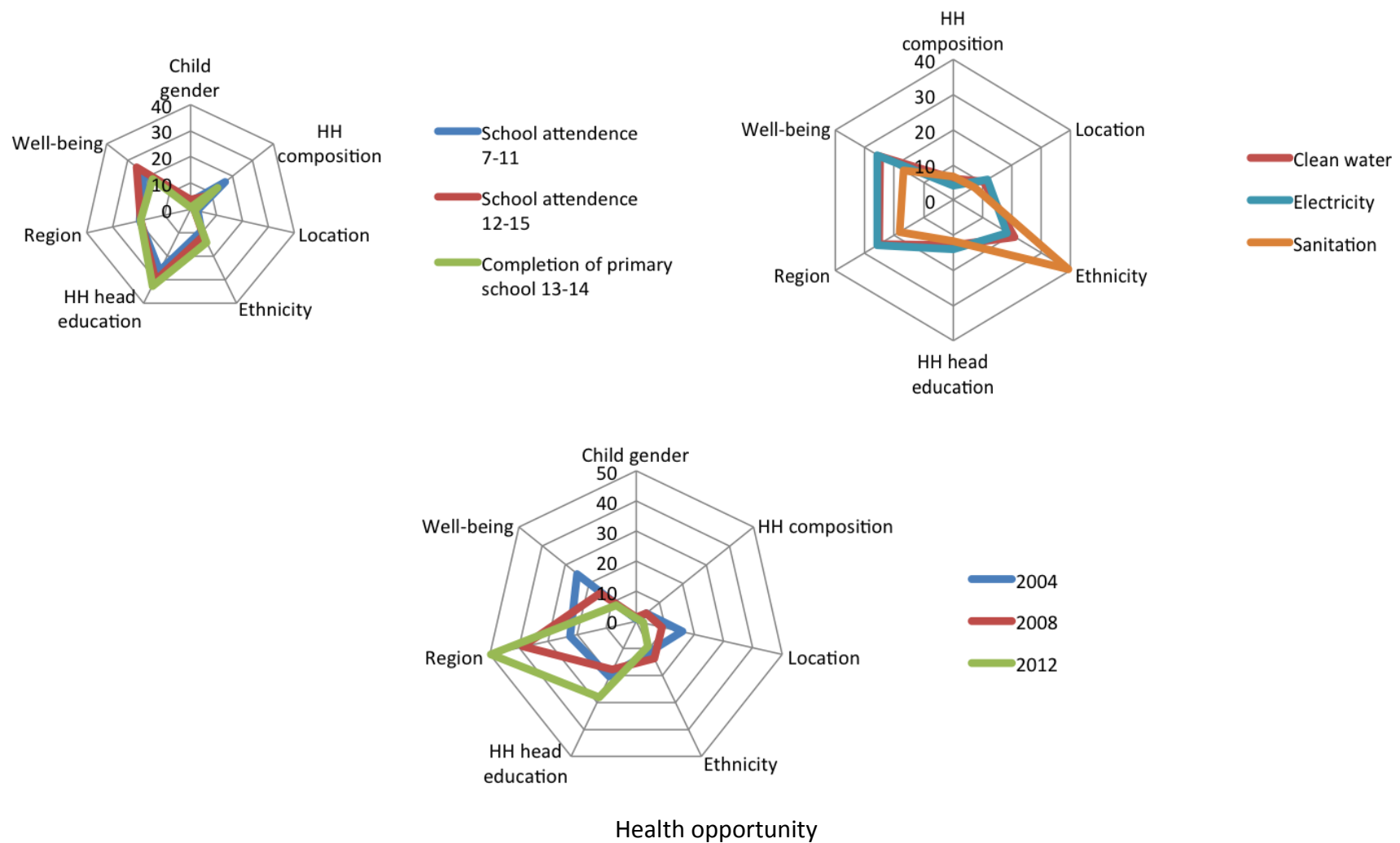
In term of the education opportunities, education level of head is always the most crucial factor for children to access to these opportunities, especially for completion of primary school on time (approximately 33 percent). Well-being and regions take the second and third places in determining unequal level, but their percentages are not extremely different. Ethnicity plays a smaller role at rates of 9-11 percents subject to each opportunity.

Unlike education opportunities, the relative contributions of the circumstances are more diverse in access to housing infrastructure. With regard to clean water and electricity, region and well-being circumstances contribute the largest parts, followed

by ethnicity and education of household head. This is similar with the composition in 2010, but household wealth was the most vital. Access to improved sanitation facilities, however, reveals the growth in relative importance of ethnicity circumstance as compared to results in Dat (2012) with a contribution of 39.3 percent in 2012. In general, region, well-being and ethnicity are the most influential factors in housing infrastructure opportunities. In addition, Son (2013) emphasizes the significant importance of location circumstance, particularly in safe water and sanitation issues.

Finally, decomposition of health opportunity overtime shows the changes in contribution of each factor. From 22 percent in 2004, region circumstance becomes the most crucial factors in 2012. There also witnesses an increase in the impact of household head's education on determining the dissimilarity, with the shares of 20.4 percent and 28.2 percent in 2004 and 2012, respectively. Contrarily, household wealth circumstance loses their first position and takes an account of only 8.5 percent at the end of the research time, which may partly reflect the success of the pro-poor programs. It is likely that well being alone cannot determine the inequality of human opportunities. In short, from the decomposition exercise, Vietnam authorities may know which and how circumstances need priority policy interventions so as to reduce inequality in access to basic services.

Figure 5 – Relative contribution of circumstances



Source: Author's calculation from VHLSSs 2004, 2008, and 2012

7. Who are the most and the least vulnerable in Vietnam?

The inequality of human opportunities means that some groups of children can access to more basic services than others. Understanding characteristics of each group will help policy makers implement more proper interventions. The most and the least vulnerable groups will be determined based on the highest and lowest quintiles of predicted probabilities, through which one can know who are most and least likely to enjoy the basic services. Profiles of each group for three types of opportunities in 2012 that reveal relatively high level of inequality are presented in Table 2.

Table 2 – The most and the least vulnerable groups in Vietnam 2012

| Circumstances | Child is male | Education level of household head | | | | | |
|--|---------------|-----------------------------------|----------------|------------------------|------------------------|-----------------------|---------------------|
| | | No Primary school | Primary school | Lower secondary school | Upper secondary school | Professional training | College/ University |
| School attendance (12-15 years old) | | | | | | | |
| Most vulnerable 20% | 59.138 | 79.89 | 17.948 | 1.452 | 0 | 0.71 | 0 |
| Least vulnerable 20% | 42.684 | 0 | 5.238 | 20.823 | 35.744 | 13.44 | 24.755 |
| Access to improved sanitation facilities | | | | | | | |
| Most vulnerable 20% | N/A | 57.529 | 26.056 | 13.219 | 2.217 | 0.979 | 0 |
| Least vulnerable 20% | N/A | 4.308 | 8.812 | 18.873 | 11.551 | 25.258 | 31.197 |
| Have a health insurance card | | | | | | | |
| Most vulnerable 20% | 55.39 | 52.358 | 38.879 | 8.763 | 0 | 0 | 0 |
| Least vulnerable 20% | 46.499 | 3.656 | 7.651 | 16.619 | 19.178 | 25.191 | 27.704 |

Table 2 - continued

| Circumstances | HH head is male | HH head living with the spouse | Number of siblings | Expenditure/Wealth index quintile | Ethnic minority | Urban |
|--|-----------------|--------------------------------|--------------------|-----------------------------------|-----------------|--------|
| School attendance (12-15 years old) | | | | | | |
| Most vulnerable 20% | 71.721 | 83.56 | 2.613 | 1.415 | 49.002 | 23.388 |
| Least vulnerable 20% | 80.414 | 87.253 | 1.668 | 4.121 | 2.239 | 42.905 |
| Access to improved sanitation facilities | | | | | | |
| Most vulnerable 20% | 85.61 | 88.197 | 2.398 | 1.2 | 77.811 | 2.767 |
| Least vulnerable 20% | 69.044 | 84.976 | 1.781 | 4.413 | 0.122 | 74.575 |
| Have a health insurance card | | | | | | |
| Most vulnerable 20% | 78.161 | 88.206 | 1.916 | 2.385 | 0 | 22.729 |
| Least vulnerable 20% | 72.131 | 81 | 1.925 | 3.559 | 20.355 | 44.145 |

| Circumstances | RRD | NE | NW | NCC | SCC | CH | SE | MRD |
|--|--------|--------|--------|--------|--------|--------|--------|--------|
| School attendance (12-15 years old) | | | | | | | | |
| Most vulnerable 20% | 1.006 | 13.735 | 8.661 | 3.566 | 4.375 | 9.697 | 25.01 | 33.95 |
| Least vulnerable 20% | 30.325 | 11.877 | 1.938 | 18.242 | 11.638 | 7.19 | 12.944 | 5.848 |
| Access to improved sanitation facilities | | | | | | | | |
| Most vulnerable 20% | 0 | 25.189 | 17.903 | 8.095 | 4.263 | 14.981 | 1.381 | 28.189 |
| Least vulnerable 20% | 48.142 | 5.803 | 0.457 | 7.483 | 4.914 | 2.11 | 29.407 | 1.685 |
| Have a health insurance card | | | | | | | | |
| Most vulnerable 20% | 0 | 0 | 0 | 0 | 0 | 2.687 | 24.694 | 72.619 |
| Least vulnerable 20% | 49.591 | 6.868 | 8.855 | 10.052 | 15.543 | 1.702 | 7.143 | 0.245 |

Source: Author's calculation from VHLSS2012

In overall, these results are similar to those reported in Dat (2012) for the year 2010. There are significant differences between the most and the least vulnerable groups in terms of composition of circumstances. Table 2 shows that less educated household head appears to dominate the most vulnerable group. In case of school attendance of children aged 12-15, household heads' education levels in the most vulnerable groups are no more than "Lower secondary". On the other hand, their educational level in the least vulnerable group is always at least "Primary schools". In

addition, ethnic minority children also account for almost half (49 percent) of the most vulnerable group given the fact that their proportion in the least vulnerable group is 2.4 percent. Dat (2012) mentioned about the positive correlations between less educated heads, a poor households and ethnic minority and all these circumstances going together can lead to a popular phenomenon that ethnic minority children often belong to the most vulnerable group. The results can be confirmed by findings from 2013-2014 MICS, there are disparities between ethnic minority households and Kinh/Hoa majority in terms of having access to safe water (75 percent versus 95 percent)⁶. Moreover, while the overall share of households using improved sanitation facilities is 79 percent, the percentage for ethnic minority households is only less than 50 percent.

With regard to region, children living in Red River Delta are usually in the least vulnerable group in all opportunities, while they seem to be absent in the most vulnerable one. In contrast, a high proportion of children living in the Mekong River Delta are included in the most vulnerable groups, especially for health opportunity. Discernable discrepancies between two groups in every opportunity can be observed in some other area such as North West and South East.

Although location circumstance is considered to be not important as region, there exists a momentous difference between the most and the least vulnerable groups in access to sanitation. Shares of children living in urban areas in the two groups are 2.8 and 74.6, respectively. To sum up, children in the most vulnerable groups usually live with less educated heads in poor households, in rural area and are ethnic minorities.

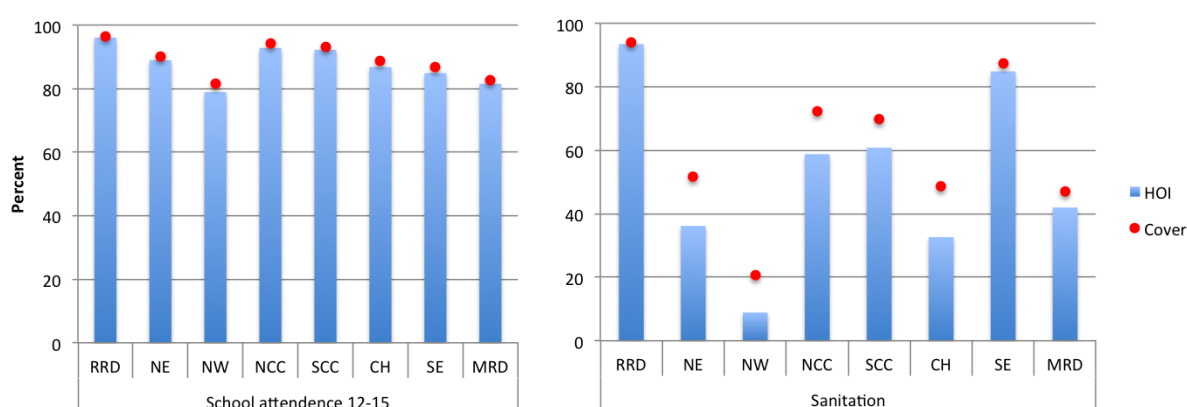
8. HOI across regions: Access to sanitation observes the highest degree of heterogeneity

The substantial importance of region in determining inequality level and the difference between the most and the least vulnerable groups across region suggest

⁶ http://www.unicef.org/vietnam/media_22994.html

that HOI for each area in Vietnam varies significantly. In order to provide support for the statement, geometric HOI for regions is needed for opportunities that exhibit high dissimilarity, which are school attendance of children aged 12-15 and access to sanitation. Although the gap in HOI for health indicator is small, it needs to be analyzed overtime to give the general picture about health opportunity for children.

Figure 6 – Regional HOI for educational and infrastructure opportunities in 2012



Source: Author's calculation from VHLSS 2012

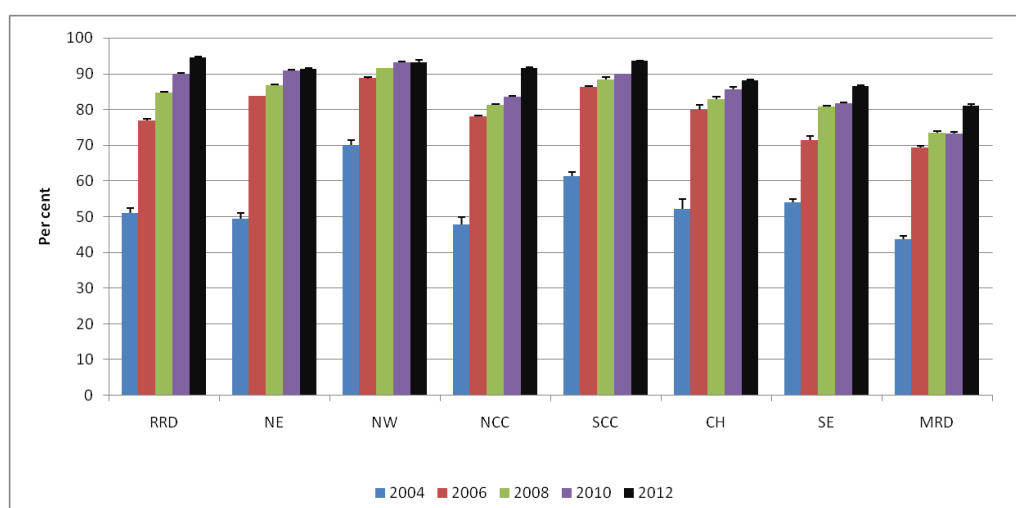
In the first two opportunities, the North West has the lowest HOI compared to that of other regions in 2012 (see Figure 6). In detail, with regard to education, HOI for this area is only 79.9 percent while HOI for the Red River Delta achieves the highest rate of about 96 percent. In addition, the Mekong River Delta has the second lowest HOI of 81.5 percent. The similar story also happens with HOI for access to sanitation but at a larger extent of inequality. HOI for the North West is extremely low at nearly 9 percent, which is 10 times lower than that of the Red River Delta. Two other regions that show low HOI are the North East and the Central Highlands. This high degree of heterogeneity is also reported in Dat (2012) for previous VHLSSs.

The gaps between HOI and coverage rate in the sanitation opportunity tend to be greater than that in the case of education. The intuition behind this phenomenon is simple. When coverage rate increases, the size of vulnerable group becomes smaller. This means that the share of opportunities that is unequally distributed is also lesser.

Since coverage for attendance of children was higher, its inequality seems to be more minor. The same explanation can be used for gaps among different sub-groups.

Health opportunity, proxied by the likelihood to have a health insurance card or a free healthcare/booklet/card/certificate, reveals an exclusively trend over time across regions. Unlike other opportunities, the North West achieves the highest HOI of 70 percent in 2004 while the Mekong River Delta remains its lowest rank in all years. The insignificant gaps between coverage rates and HOIs of sub-groups are similar to each other, indicating high level of equality in healthcare service for children. The result confirms once more time the remarkable progress in health insurance policies of the government.

Figure 7 – Regional HOI for health opportunity in the period of 2004-2012



Source: Author's calculation from VHLSSs 2004, 2006, 2008, 2010, and 2012

9. Conclusion and policy implications

This study examines the unequal status of opportunities for children in Vietnam based on the Human Opportunity Index using the data sets VHLSSs 2004, 2006, 2008, 2010, and 2012. The index covers both coverage rate and the level of unfairness across different groups of children in terms of accessibility to several basic services (education, housing infrastructure, and health opportunities).

Regarding to recent trends of opportunities, almost all indicators show improvements in the coverage and HOI, especially access to sanitation and healthcare service. The inequality of children's opportunities has reduced gradually, revealed by the smaller gaps between coverage and HOI as compared to previous years. A decomposition task, which is used to investigate the main components of changes in HOI, indicates scale effect as the principal reason in most of the cases.

In addition, Shapley decomposition is applied to estimate the relative importance of each circumstance in determining dissimilarities of children opportunities. In the education aspect, education levels of household heads are the most important factor, followed by well being and region circumstances. However, with respect to infrastructure opportunities, in addition to the aforementioned circumstances, ethnicity is considered as one of the three main factors. Similarly, region also takes the lead in driving the inequality of health opportunity.

The vulnerable profile is then constructed and reveals common characteristics of the most and least vulnerable groups. In general, children living with less educated heads in a poor households in rural areas and being from ethnic minorities are least likely to enjoy the basic services.

Since region circumstance always plays a substantial role in determining the inequality, geometric HOI is then calculated to compare the HOI across regions. Among the three indicators, access to improved sanitation facilities experiences the highest level of disparities across regions.

Given above findings, a number of policy implications can be drawn. Firstly, Vietnam authorities should target on some specific aspects that exhibit relatively low coverage rate and HOI like school attendance of children aged 12-15 and access to improved sanitation facilities. These disadvantaged opportunities need urgent support so as to raise the universality of the services for all children, regardless of their circumstances.

Moreover, it is obvious that the most vulnerable groups should be received more attention and policy interventions to get out of vicious cycle of poverty and intergenerational inequality of opportunities. Poverty can make inequality of opportunities more severe by inhibiting household heads (e.g. parents) from investing in education and health for children. Other living requirements such as nutrition, housing facilities, and immunization are also significantly affected; thereby children are less likely to access to basic services. Since little can be done with education level of household heads, the government should firstly promote poverty reduction by designing pro-poor policies. Moreover, regional and location circumstances have contributed to the inequality in children opportunities, which suggests that regional and rural development are matters of concern. Finally, it is obvious that children belonging to ethnic minority groups are more vulnerable which can be easily affected by various shocks and less likely to access to basic services as compared to Kinh/Hoa majority. Thus, subsidy programs should focus on improving living conditions and providing quality education, health services as well as better infrastructure for the minorities.

References

Dat, Vu Hoang. 2012. *Opportunities for children in Vietnam*. Washington, DC: World Bank.

Katsushi, Imai S. and Raghav, Gaiha. 2007. Poverty, Inequality and Ethnic Minorities in Vietnam, Brooks World Poverty Institute working paper 10.

Save the children. 2012. Born Equal. Available at http://www.savethechildren.org.uk/sites/default/files/images/Born_Equal.pdf.

Son, Hyun H. 2013. Inequality of Human Opportunities in Developing Asia, *Asian Development Review*, Vol. 30(2), pp. 110–130.